

### REMARKS/ARGUMENTS

Claims 1, 2, 7, 8, 10-14, 17, and 18 were pending in the present application. The present response amends claims 1, 7, 8, 12, 14, 17, and 18, leaving pending in the application claims 1, 2, 7, 8, 10-14, 17, and 18. Reconsideration of the rejected claims and consideration of the newly presented claims is respectfully requested.

#### I. Rejection under 35 U.S.C. §112

Claims 1-8, 10-14, 17, and 18 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Independent claims 1, 17, and 18 have been amended in order to clarify that the “opaque, reflective” metal layer is reflective to incident radiation transmitted by the multilayer stack such that at least one resonant wavelength exists in the spacer layer, and is opaque to incident radiation transmitted through the spacer layer such that the incident radiation is absorbed, not transmitted, by the metal layer. As such, dependent claims 2-8 and 10-14 also should be sufficiently definite. Claim 8 has been amended to clarify what is meant by element “x” and should be sufficiently definite. Applicants therefore respectfully request that the rejection with respect to claims 1-8, 10-14, 17, and 18 be withdrawn.

#### II. Rejection under 35 U.S.C. §102

Claims 1, 2, 7, 8, 10, 17, and 18 are rejected under 35 U.S.C. §102(b) as being anticipated by *Trost* (US 5,341,238). Claim 1 as amended recites an optical filter defined by:

- a metal layer;
- a dielectric spacer layer deposited on said metal layer; and
- a dielectric stack of alternating relatively high and low refractive index layers deposited on said spacer layer;

wherein the thickness of said dielectric spacer layer and said high and low refractive index layers is selected such that in a predetermined resonant wavelength band, radiation incident on the filter is transmitted through the dielectric stack and the spacer layer to the metal layer, and wavelengths outside the predetermined resonant wavelength band are reflected from said dielectric stack; and

wherein the metal layer is opaque to the incident radiation in said predetermined resonant wavelength band, such that the incident radiation transmitted through the dielectric spacer layer is channeled into and absorbed by the metal layer, and none of the incident radiation in said predetermined resonant wavelength band is transmitted through the metal layer.

*(emphasis added)*. Such a device is not disclosed by *Trost*.

*Trost* does not disclose an absorptive filter, as required by Applicants' claim 1, but discloses a transmissive filter (col. 2, lines 18-55; col. 4, lines 27-39). As shown in the system of Figure 1, the dichroic filter of *Trost* would not work if the filter was absorptive, as it is necessary for light to be transmitted through the filter (Fig. 1; col. 2, lines 18-55). The fact that a layer such as indium tin oxide "will absorb approximately 20% of the power of an incident" beam without coating (col. 5, lines 14-26) does not mean that layer 34 is opaque, as indicated in the Office Action on page 3, as approximately 80% of the light would still be transmitted. In fact, *Trost* explicitly states that layer 34 "reflects infrared (and longer wavelength) radiation while transmitting visible radiation" (col. 4, lines 27-39). Further, *Trost* states that for most applications, the invention must include at least one coating in order to reduce the presence of absorption (col. 5, lines 21-26). An additional coating can be used to partially reflect a narrow band of visible radiation, such that the transmissive filter of *Trost* "efficiently" transmits "wavelengths of the visible spectrum outside such narrow band" (col. 3, lines 42-47). Even when a thin layer of gold is used as layer 34, the layer still will "transmit visible radiation" over a "visible frequency range" (col. 4, lines 40-51). As *Trost* does not disclose an absorptive filter including an opaque metal layer, *Trost* cannot anticipate claim 1.

Further, claim 1 requires a dielectric spacer layer and dielectric stack having a thickness selected such that in a predetermined resonant wavelength band, radiation incident on the filter is transmitted through the dielectric stack and the spacer layer to the metal layer, and wavelengths outside the predetermined resonant wavelength band are reflected from said dielectric stack. Such a limitation is not disclosed by *Trost*. While the Office Action states that "*Trost* does not discuss resonance, or a resonant wavelength, in any context," the Office Action also states on page 5 that "any layer(s) between the metal layer and the dielectric stack may be considered a spacer layer" and resonance is an "inherent property in the structure of the device." While *Trost* might inherently contain some degree of resonance, Applicants respectfully submit that any resonance of *Trost* is also inherently different from the resonance required by Applicants' claim 1. *Trost* does not disclose controlling the thickness of any of the layers to control the transmission of a predetermined resonant wavelength band through the dielectric stack and the spacer layer to the metal layer. Instead, for instance, *Trost* disclosed producing "a standing wave in the visible band" using dielectric layers 24 and 28, disposed on opposing sides of the gold layer in order to produce a standing wave across the gold layer, with "an antinode at gold

layer 26,” in order to “enhance the transmission of visible radiation” (col. 2, lines 35-55). *Trost* therefore creates a standing wave in order to transmit visible light across the gold layer.

In Applicants’ claim 1, however, the predetermined resonant wavelength band is transmitted to the opaque metal layer. The metal layer is opaque to the predetermined resonant wavelength band, such that no transmission of the incident radiation occurs. Any radiation outside the narrow transmissive wavelength band is reflected, and not transmitted. In this manner, incident radiation in the predetermined resonant wavelength band that is trapped in the resonator formed between the reflective metal layer and the dielectric stack will be absorbed by the metal layer. This is fundamentally different from the transmissive functionality of *Trost*.

For at least these reasons, *Trost* cannot anticipate claim 1. Claims 2, 7, 8, 10 depend from claim 1, and also cannot be anticipated.

Claims 17 and 18 recite lasers which also include absorptive filtering elements including at least one transmissive/resonant wavelength band and an opaque, reflective metal. As discussed with respect to claim 1, such limitations are not disclosed by *Trost*. As such, *Trost* cannot anticipate claims 17 and 18. Applicants therefore respectfully request that the rejection with respect to claims 1, 2, 7, 8, 10, 17, and 18 be withdrawn.

### **III. Rejection under 35 U.S.C. §103**

Claims 11-14 are rejected under 35 U.S.C. §103(a) as being obvious over *Trost*. Claims 11, 13, and 14 depend from claim 1. As discussed above, *Trost* does not teach or suggest an absorptive filter including an opaque metal. As shown in Figure 1, it is necessary for the dichroic filter of *Trost* to transmit the visible light in order to allow viewing of the transmitted light through microscope objective lenses 6 and 8 (see also col. 1, lines 43-50). Therefore, not only does *Trost* not teach or suggest using an absorptive filter having an opaque metal layer that does not transmit light, but such a device would not work with the system of Figure 1. As such, *Trost* cannot render claim 1 obvious. Neither can dependent claims 1, 13, and 14 then be rendered obvious. Claim 12 recites an absorptive optical filter requiring an opaque reflective metal layer. As such, claim 12 similarly cannot be rendered obvious by *Trost*. Applicants therefore respectfully request that the rejection with respect to claims 11-14 be withdrawn.

**VI. Amendment to the Claims**

Unless otherwise specified, amendments to the claims are made for purposes of clarity, and are not intended to alter the scope of the claims or limit any equivalents thereof. The amendments are supported by the specification and do not add new matter to the specification.

**V. Conclusion**

In view of the above, it is respectfully submitted that the application is now in condition for allowance. Reconsideration of the pending claims and a notice of allowance is respectfully requested.

The Commissioner is hereby authorized to charge any deficiency in the fees filed, asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 50-1703, under Order No. COHP-4570. **A duplicate copy of the transmittal cover sheet attached to this Response to Office Action Mailed January 14, 2004, is provided herewith.**

Respectfully submitted,

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